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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,741

08/16/2006

Michael J. Sailor

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EXAMINER

ANDLER, MICHAEL S

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,741	<b>Applicant(s)</b> SAILOR ET AL.	
	<b>Examiner</b> Michael Andler	<b>Art Unit</b> 2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18,20-24 and 26-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18,20-24 and 26-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6 July 2010</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. The examiner acknowledges and has entered the amendment/arguments filed on 6 July 2010. Claims **1-17, 19 and 25** are cancelled by this amendment. New claim **42** is added. Claims **18, 20-24 and 26-42** are currently pending.

#### *Claim Objections*

2. The objection to claim **8** is withdrawn in light of the amendment filed on 6 July 2010.

#### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

a) Claim **18** is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim **52** of copending Application No.10/503,217). Although the conflicting claims are not identical, they are not

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patentably distinct from each other because they recite terminology that refers to the same disclosed material.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Regarding claim **18**, the instant application recites “a thin film including pores (of varying porosity” whereas the conflicting application recites “an optically encoded particle having a tailored varying porosity”; the instant application recites “varying the etching conditions” whereas the conflicting application recites “varying the etching current density waveform and the etching duration waveform” which are types of etching conditions; the instant application recites “generate an optical signature in the reflectivity spectrum in response to illumination” whereas the conflicting application recites “to produce a plurality of tailored optical reflective peaks”; the instant application recites “a grey scale code” whereas the conflicting application recites “optically encoded” and lastly, the instant application claims “an etching waveform formed by the addition of at least two separate sine components” whereas the conflicting application recites “varying the etching current density waveform and the etching duration waveform during manufacture of the particle”. Therefore, it would have been obvious to one of ordinary skill in the art to describe a method for encoding a thin film or optically encoded particle having varying porosity and formed on a substrate by etching in either manner.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

a) Claims **18, 20-24, and 26-42** are rejected under 35 U.S.C. 102(a) as being anticipated by Sailor et al. (WO03067231).

Regarding claims **18 and 42**, Sailor et al. discloses a method for encoding thin films, comprising steps of:

etching a semiconductor or insulator substrate to form a thin film including pores (Fig 4, steps 14, 16 and 18);

varying etching conditions to vary porosity in the thin film according to a pattern that will generate an optical signature in the reflectivity spectrum in response to illumination, the optical signature including a grey scale code (Fig 4, step 20);

wherein said step of varying comprises applying an etching waveform formed by the addition of at least two separate sine components in accordance with the equation for adding two sine components (See Fig 3A and page 4, lines 6-8; and Fig 4, step 20; Fig 2A; Fig 2B and page 8, lines 10-19. In addition, see page 10, lines 22-24 which teaches modulating the etching density periodically with a pseudo-sine wave between 11.5 and 34.6 mA/cm<sup>2</sup> (which is an amplitude) where modulation, in general, is the process of varying on or more properties of a periodic waveform with respect to a modulating signal. Therefore, Sailor et al. teaches these additional limitations.

Regarding claim **20**, Sailor et al. discloses wherein the grey scale code is revealed in naturally optically converted k-space (See Fig 2A and 2B).

Regarding claim **21**, Sailor et al. discloses further comprising a step of separating the thin film from the semiconductor or insulator substrate (Fig 4, step 22).

Regarding claim **22**, Sailor et al. discloses further comprising a step of separating the thin film into particles (Fig 4, step 24).

Regarding claim **23**, Sailor et al. discloses further comprising a step of placing a particle within a host (Fig 4, step 28).

Regarding claim **24**, Sailor et al. discloses further comprising steps of: generating an interference pattern in the reflectivity spectrum by illumination of one or more of the particles (See claim 32);

determining a particle's code from the position and heights of peaks in k-space (See Fig 2A and 2B and claim 32).

Regarding claim **26**, Sailor et al. discloses further comprising a step of spatially defining the semiconductor or insulator substrate to conduct said step of etching in a spatially defined location or locations (See claim 27).

Regarding claim **27**, Sailor et al. discloses wherein said step of varying further varies etching conditions in different spatially defined locations to encode multiple codes in the thin film (See claim 28).

Regarding claim **28**, Sailor et al. discloses further comprising a step of separating the thin film from the semiconductor or insulator substrate (See claim 29).

Regarding claim **29**, Sailor et al. discloses further comprising a step of separating the thin film into particles (See claim 30).

Regarding claim **30**, Sailor et al. discloses:

associating the encoded particle with the analyte or the host;  
generating an interference pattern in the reflectivity spectrum by illumination of the particle;  
determining the particle's code from the interference pattern;  
identifying the analyte or the host based upon said step of determining (See claim 32).

Regarding claim **31**, Sailor et al. discloses further comprising a step of designating the particle to bind an analyte by modifying the particle with a specific receptor or targeting moiety (See claim 33).

Regarding claim **32**, Sailor et al. discloses wherein the targeting moiety is a sugar or polypeptide (See claim 34).

Regarding claim **33**, Sailor et al. discloses further comprising a step of signaling binding of an analyte by fluorescence labeling or analyte autofluorescence (See claim 35).

Regarding claim **34**, Sailor et al. discloses a method of encoding micron sized particles, the method comprising steps of:

etching a wafer to form a thin film having a varying porosity that will produce a detectable optical signature grey scale code in response to illumination;

applying an electropolishing current to the wafer to remove the porous film from the wafer;

dicing the film into micron-sized particles, each micron-sized particle maintaining an optical signature produced by said step of etching (See claim 36).

Regarding claim **35**, Sailor et al. discloses further comprising a step of modifying the particles with a specific receptor or targeting moiety (See claim 37).

Regarding claim **36**, Sailor et al. discloses an optically encoded particle, comprising: a layer of material (Fig 1); and porosity within the layer of material configured to produce an interference pattern in the reflectivity spectrum that forms an optical signature including a detectable grey scale code (Page 5, lines 3-5 and 19-23); wherein the grey scale code is embedded in its physical structure by refractive index changes between different regions of the particle (See Abstract).

Regarding claim **37**, Sailor et al. discloses a receptor for binding a predetermined analyte (Page 6, lines 20-22).

Regarding claim **38**, Sailor et al. discloses wherein said receptor is a receptor for a biological analyte (See claim 15).

Regarding claim **39**, Sailor et al. discloses wherein said receptor is a receptor for a chemical analyte (See claim 16).

Regarding claim **40**, Sailor et al. discloses wherein said receptor is a receptor for a gaseous analyte (See claim 17).

Regarding claim **41**, Sailor et al. discloses a fluorescence tag for assaying the particle (Page 12, lines 6-7).

### ***Response to Arguments***

5. Regarding claim **18** and its respective dependent claims, applicant has amended the claims to clarify that the etching conditions are varied by “applying an etching waveform formed by the addition of at least two separate sine components in



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accordance with the equation for adding two sine components” and has argued that the previously cited prior art reference of Sailor et al. (WO03067231) does not teach these additional limitations.

The examiner respectfully disagrees and would point out that Sailor et al. teaches modulating the etching density periodically (i.e. a frequency) with a pseudo-sine wave between 11.5 and 34.6 mA/cm<sup>2</sup> (i.e. an amplitude) where modulation, in general, is the process of varying on or more properties of a periodic waveform with respect to a modulating signal (See Fig 3A and page 4, lines 6-8; and Fig 4, step 20; Fig 2A; Fig 2B and page 8, lines 10-19. In addition, see page 10, lines 22-24). Therefore, Sailor et al. teaches these additional limitations.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Andler whose telephone number is (571) 270-5385 and whose e-mail address is michael.andler@uspto.gov. The examiner can normally be reached on Monday-Friday 7:30 AM to 3:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Andler/  
Examiner, Art Unit 2876

/Michael G Lee/  
Supervisory Patent Examiner, Art Unit 2876